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NOTES ON THE BREEDING OF THE AMERICAN TOAD.

I had the opportunity on June 5, 1917, to observe the breeding of the American Toad. The place was a small artificial pool, about four by six feet. A steady rain fell throughout the evening. Mr. Richard G. Turner and I first approached the singing male at 9:00 P. M. It was quite dark at the time. At first we could not advance towards the toad within thirty feet without the trill's instantly ceasing. We used the most stealthy manner of approach. Then we tried hiding behind a tree, but the first step would be detected and the trill stopped at once until we withdrew. About ten o'clock we discovered that our steps were not followed by silence, and to our amazement we walked up to the pool and threw on a small electric search light, all the while the trill continuing. The male was sitting on the edge of the pool, the throat membrane fully extended and the trill throbbing in our ears. Five feet away was the large female rapidly hopping towards the male. From this time on, the toads seemed to take no notice of our motions. Indeed, again and again we reached down and touched or tightly held the inflated membrane as the male sang. Even this made no difference to the toad.

The performance that went on was repeated as long as we stayed. It was as follows: When the male began to trill, the effect on the female was instantaneous. Whether she was in the water or on the land, she would make frantic efforts to reach the male. But the second the trill stopped she was all indifference, and often in a few moments would hop off in another direction. But as the trills came every few minutes, she would finally in one of her drives reach the male while he was in the midst of a trill. He would not seem to notice her until she was within an inch of him; then he would scramble on her back,

and sometimes there finish the trill. If on land, the female would at once start for the water. A few moments after reaching the water, the male would lose his hold and be tossed off. Then the performance would start all over again, the male usually climbing first out of the water. He would take absolutely no notice of the female if he was not trilling when she was placed next to him. Thus, the interesting feature was that the trill is the apparent stimulus for both sexes. We left the pool about eleven o'clock, but the trills were heard far into the night.

We did not actually see the operation of spawning, but a little later hundreds of tiny tadpoles were observed in the pool.

GORDON BOIT WELLMAN,
Malden, Mass.